



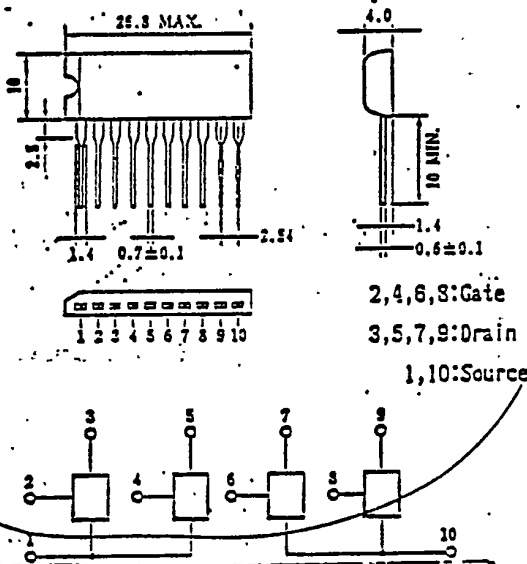
PRELIMINARY SPECIFICATION

MOS FIELD EFFECT TRANSISTOR

 $\mu$  PA1570HFAST SWITCHING  
N-CHANNEL SILICON POWER MOS FET

## PACKAGE DIMENSIONS

In millimeters



## Features

Suitable for switching power supplies,  
actuator controls and pulse circuits  
4V Gate Drive — Logic level —  
Low  $R_{DS(on)}$   
No second breakdown —

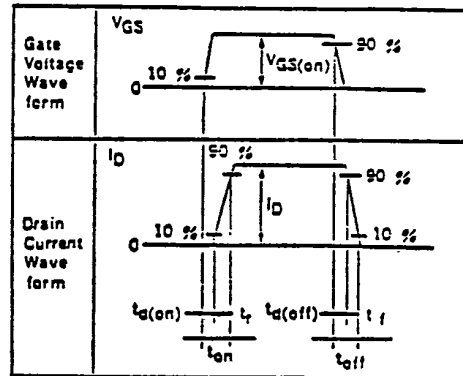
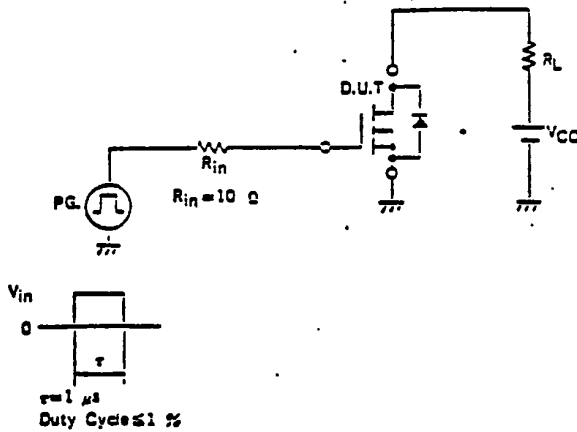
Absolute Maximum Ratings ( $T_a=25^\circ\text{C}$ )

|                                                |                |                                    |
|------------------------------------------------|----------------|------------------------------------|
| Drain to Source Voltage                        | $V_{DS}$       | 30V                                |
| Gate to Source Voltage                         | $V_{GS}$       | $\pm 20V$                          |
| Continuous Drain Current                       | $I_{D(DC)}$    | $\pm 2.0A/\text{unit}$             |
| Pulse Drain Current                            | $I_{D(pulse)}$ | $\pm 8.0A/\text{unit}$             |
| Total Power Dissipation                        | PT             | 3.5W                               |
| Total Power Dissipation                        | PT**           | 22W                                |
| Channel Temperature                            | $T_{ch}$       | $150^\circ\text{C}$                |
| Storage Temperature                            | $T_{stg}$      | $-55\text{ to }+150^\circ\text{C}$ |
| * $PW \leq 100 \mu s$ , Duty Cycles $\leq 2\%$ |                |                                    |
| ** $T_c=25^\circ\text{C}$                      |                |                                    |

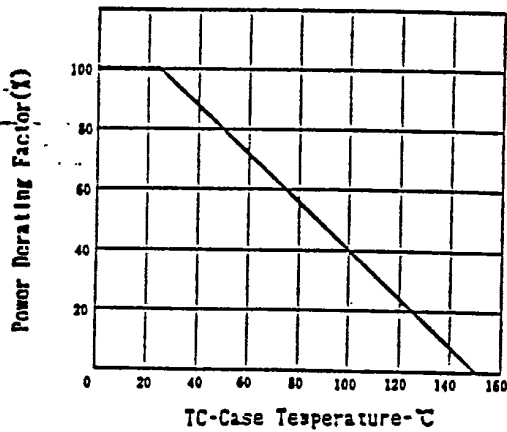
Electrical Characteristics ( $T_a=25^\circ\text{C}$ )

| Characteristics                     | Symbol        | Min. | Typ. | Max. | Unit     | Test Conditions            |
|-------------------------------------|---------------|------|------|------|----------|----------------------------|
| Drain Leakage Current               | $I_{DSS}$     |      |      | 10   | $\mu A$  | $V_{DS}=30V, V_{GS}=0$     |
| Gate to Source Leakage Current      | $I_{GSS}$     |      |      | 100  | nA       | $V_{GS}=20V, V_{DS}=0$     |
| Gate to Source Cutoff Voltage       | $V_{GS(off)}$ | 1.0  |      | 2.5  | V        | $V_{DS}=10V, I_D=1.0mA$    |
| Forward Transfer Admittance         | $ y_{fs} $    | 1.0  |      |      | S        | $V_{DS}=10V, I_D=1.0A$     |
| Drain to Source On-State Resistance | $R_{DS(on)}$  |      |      | 0.35 | $\Omega$ | $V_{GS}=10V, I_D=1.0A$     |
| Drain to Source On-State Resistance | $R_{DS(on)}$  |      |      | 0.50 | $\Omega$ | $V_{GS}=4.0V, I_D=1.0A$    |
| Input Capacitance                   | $C_{iss}$     |      | 270  |      | pF       | $V_{DS}=10V$               |
| Output Capacitance                  | $C_{oss}$     |      | 150  |      | pF       | $V_{GS}=0$                 |
| Reverse Transfer Capacitance        | $C_{rss}$     |      | 70   |      | pF       | $f=1.0MHz$                 |
| Turn-On Delay Time                  | $t_{d(on)}$   |      | 45   |      | ns       | $I_D=1.0A, V_{GS(on)}=10V$ |
| Rise Time                           | $t_r$         |      | 40   |      | ns       | $V_{cc}=15V, RL=15\Omega$  |
| Turn-Off Delay Time                 | $t_{d(off)}$  |      | 450  |      | ns       |                            |
| Fall Time                           | $t_f$         |      | 110  |      | ns       |                            |

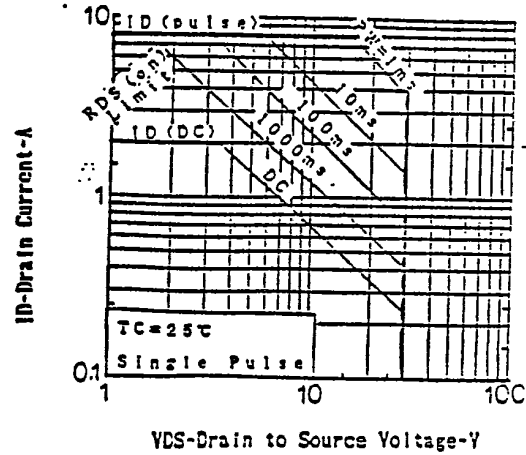
TURN-ON AND TURN-OFF TIME TEST CIRCUIT



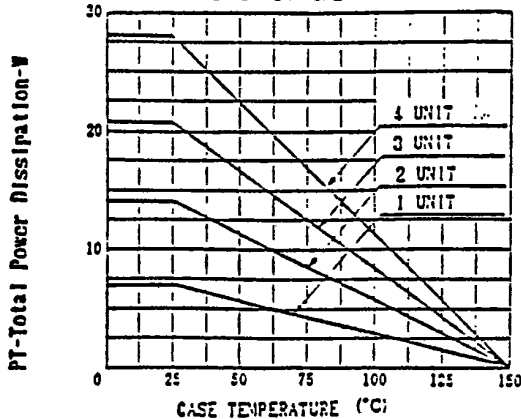
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



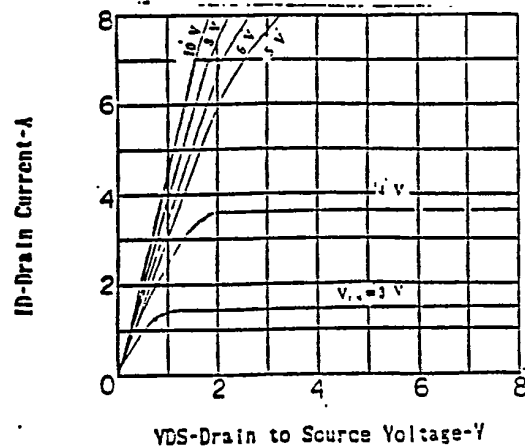
FORWARD BIAS SAFE OPERATING AREA

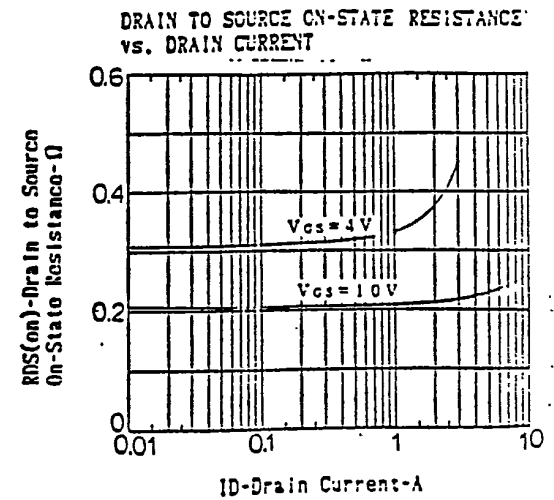
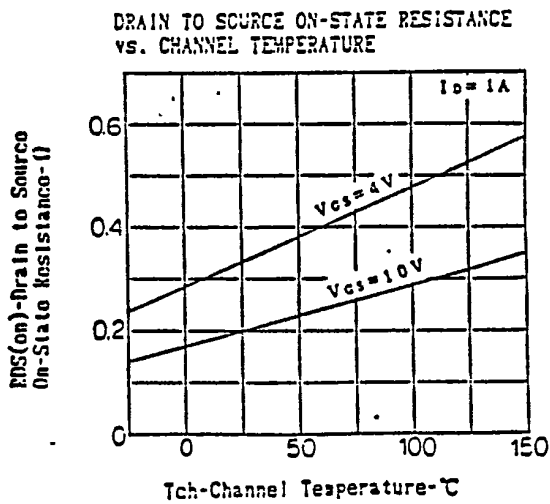
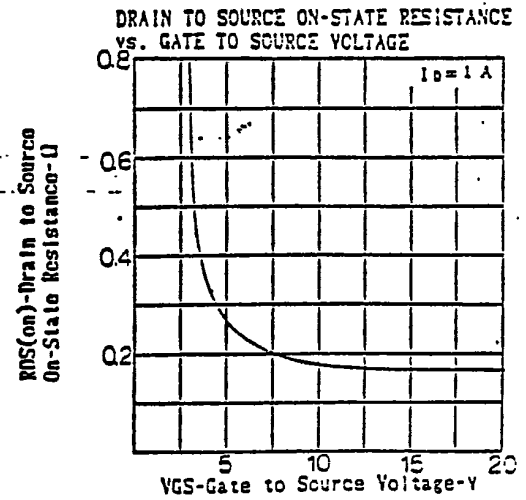
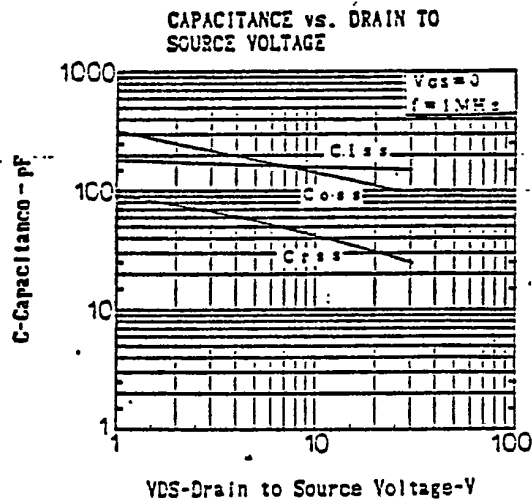
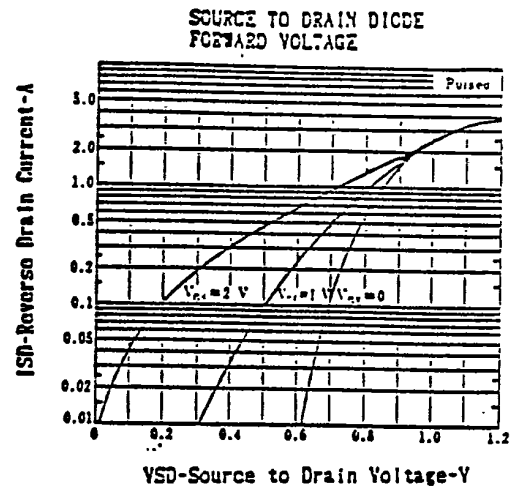
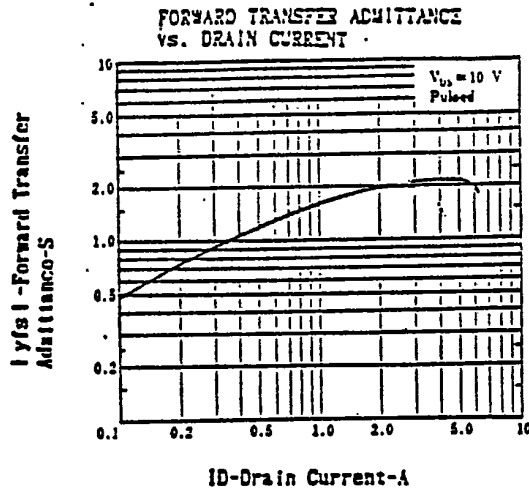


TOTAL POWER DISSIPATION vs. CASE TEMPERATURE

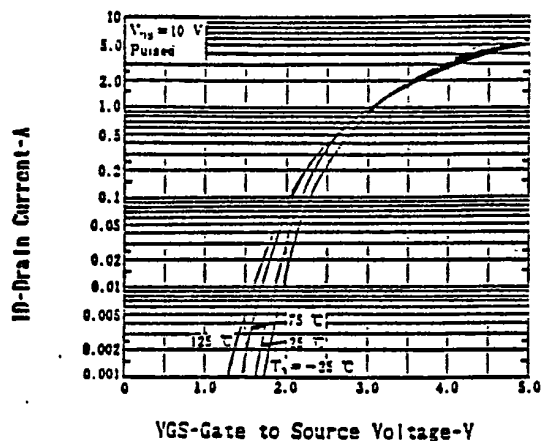
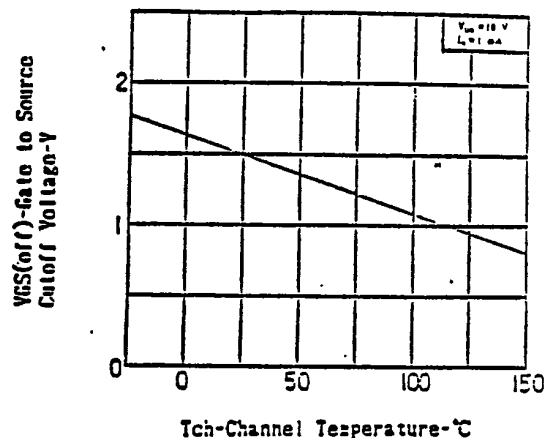


DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE

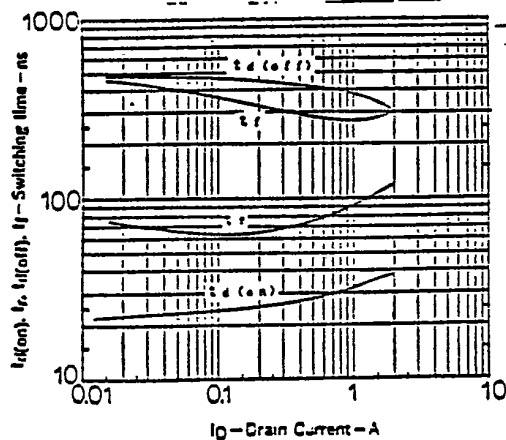




TRANSFER CHARACTERISTICS

GATE TO SOURCE CUTOFF VOLTAGE  
VS. CHANNEL TEMPERATURE

SWITCHING CHARACTERISTICS



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